

REMARKS

In the foregoing amendment, the sinter plate is stated to be in the green layer having a cavity, thereby eliminating the question of support raised in the Advisory Action.

By the foregoing amendment, the informality in claim 1 noted by the Examiner in the Office Action has been corrected. As a result, it is respectfully submitted that the claim objection is no longer pertinent.

It is respectfully submitted that the Office Action rejections of Claims 1, 4-7, 9-12, 14, 16 and 18-20 under 35 U.S.C. § 102 over Kodama and of Claims 8, 13 15 and 17 under 35 U.S.C. § 103 over Kodama in view of Nomura should not be repeated.

Ceramics generally undergo a large dimensional change (shrinkage) when they are sintered and this can cause major problems. A number of methods have been proposed to address this problem. In what is called the non-shrinkage method, the shrinkage of the in green ceramic laminate in the plane (X-Y) direction is largely restrained while the laminate shrinks in the lamination (Z) direction during firing. However, if the green laminate which is being fired contains a cavity, the surface of the resulting laminate will be greatly warped or distorted as a result of the firing. In the present invention, that problem is addressed by providing a sintered plate having an area smaller than the area of the primary face of the green layer for the substrate on which the plate is arranged as well as having a thickness which is less than that of the green layer on which the plate is arranged and disposing the sintered plate in the cavity formed in the green layer. As a result, warping or distortion of the surface of the laminate during firing can be effectively retarded. As pointed out on page 15 of this application, since the sintered plate has reduced thickness (see, e.g., Fig. 4), firing of the unsintered composite laminate including the sintered plate can be performed without

problems. As pointed out on page 11, when the shape of the sintered plate is about 100 μm or less, the shrinkage behavior in the direction of thickness need not be severely controlled.

The features of the claimed invention are not taught or suggested by the cited art whether considered alone or in combination.

The Kodama patent relates to a method of producing a multilayer ceramic body having improved dimensional accuracy by providing a sintered body in which the whole or a part of a side surface has a curved surface. This is attained by controlling both the pressure applied and the optimum level of the frictional or constraining force between a material which applies pressure and the material to which pressure is applied. While an embodiment is disclosed which includes embedding a substrate which has been fired as an interior layer of the composite body, there is no teaching or suggestion of providing a multilayer body which includes a plurality of green layers, a green layer having a cavity and a sintered plate of a fired first ceramic functional material disposed in that cavity. It also does not teach or suggest that the sintered plate have an area smaller than the area of the primary face of the green layer for the substrate on which the plate is arranged and that the sintered plate have a thickness which is smaller than the thickness of the green layer on which the plate is arranged. Kodama indicates that the fired substrate is a substitute for one of the layers of the laminate and as such, it would have the same thickness as the other layers. Placing a capacitor in a via hole, referenced in the Advisory Action, is not contrary to the foregoing. Indeed, it is submitted that the statement in Example 14 that the capacitor in the hole is in three-dimensional contact with the wirings is a teaching that the capacitor has the same thickness as the hole.

Nomura is being relied upon with respect to the specific dimension of the plate in some dependent claims. The Office Action advanced the proposition that the thickness of the capacitor would be in the range of 100 μm or less if one takes the number and thicknesses within the preferred range suggested by Nomura into consideration. Even if that assertion is correct, neither the calculation nor anything else in this reference suggests that the thickness of a sintered plate be different from that of any of the green layers.

In light of all of the foregoing, it is respectfully submitted that this application is now in condition to be allowed and the early issuance of a Notice of Allowance is respectfully solicited.

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Respectfully submitted,

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